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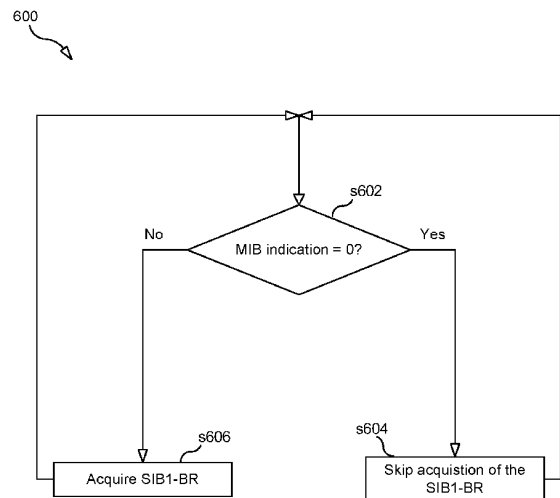
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(54) **METHODS AND SYSTEMS FOR REDUCING SYSTEM INFORMATION (SI) ACQUISITION TIME**

(57) Enabling a UE to determine whether the UE can skip the acquisition of SIB1-BR. An indication (e.g., a one bit flag) in the MIB is provided, which indication is set to a particular value if the UE needs to read SIB1-BR, otherwise the indication is set to a different value indicating that the UE can skip reading SIB1-BR assuming other conditions are met (e.g., assuming that the UE has previously read SIB1-BR within a MIB indication time period).



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FIG. 6



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DOCUMENTS CONSIDERED TO BE RELEVANT

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55

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|--|---|---|---|
| X | "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (Release 14)", 3GPP STANDARD ; TECHNICAL SPECIFICATION ; 3GPP TS 36.331, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE, vol. RAN WG2, no. V14.2.2, 20 April 2017 (2017-04-20), pages 1-721, XP051298184, [retrieved on 2017-04-20] | 1,3,4,6, 7,9, 11-15 | INV. H04W48/08 |
| Y | * page 288 - page 294 * ----- | 2,5,8,10 | |
| X | QUALCOMM INCORPORATED: "Reduced system acquisition time", 3GPP DRAFT; R1-1705011 REDUCED SYSTEM ACQUISITION TIME, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG1, no. Spokane, USA; 20170403 - 20170407 2 April 2017 (2017-04-02), XP051243142, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN1/Docs/ [retrieved on 2017-04-02] | 1,3,4,6, 7,9, 11-15 | TECHNICAL FIELDS SEARCHED (IPC) H04W |
| Y | * page 1 - page 3 * ----- - / - - | 2,5,8,10 | |
| The present search report has been drawn up for all claims | | | |
| Place of search Munich | | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |

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5

DOCUMENTS CONSIDERED TO BE RELEVANT

10

15

20

25

30

35

40

45

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|--|---|-------------------|---|
| Y | ERICSSON: "System Information Broadcast for NB-IOT", 3GPP DRAFT; R2-154170 - NB-IOT SYSTEM INFORMATION, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG2, no. Malmö, Sweden; 20151005 - 20151009 30 September 2015 (2015-09-30), XP051024070, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_91bis/Docs/ [retrieved on 2015-09-30] * paragraph [2.2.3] * | 2,10 | |
| Y,P | SIERRA WIRELESS S A (EMAIL RAPPORTEUR): "Email discussion report [99#46] [MTC] Skipping SIB1-BR", 3GPP DRAFT; R2-1711477, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG2, no. Prague, Czech Republic; 20171009 - 20171013 8 October 2017 (2017-10-08), XP051343453, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN2/Docs/ [retrieved on 2017-10-08] * page 8 * | 5 | |
| The present search report has been drawn up for all claims | | | TECHNICAL FIELDS SEARCHED (IPC) |

1

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55

| | | |
|--|---|---|
| Place of search Munich | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
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Application Number
EP 24 21 2828

5

DOCUMENTS CONSIDERED TO BE RELEVANT

10

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20

25

30

35

40

45

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|--|---|-------------------|---|
| A | INTEL CORPORATION: "System Information change", 3GPP DRAFT; R2-160447_NB-IOT_SI-CHANGE_INTEL, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG2, no. Budapest, HU; 20160119 - 20160121 18 January 2016 (2016-01-18), XP051054735, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN2/Docs/ [retrieved on 2016-01-18] * paragraph [02.1] * | 1-15 | |
| A | INTEL CORPORATION: "System information modification for Release-13 low complexity UEs and enhanced coverage", 3GPP DRAFT; R2-154378_LC-MTCE2_SIB-MODIFICATION_INTEL, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG2, no. Malmö, Sweden; 20151005 - 20151009 4 October 2015 (2015-10-04), XP051004954, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN2/Docs/ [retrieved on 2015-10-04] * paragraph [02.2] * | 1-15 | |
| The present search report has been drawn up for all claims | | | TECHNICAL FIELDS SEARCHED (IPC) |

1

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55

| | | |
|--|---|---|
| Place of search Munich | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
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5

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10

15

20

25

30

35

40

45

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|----------|---|-------------------|---|
| A | US 9 001 723 B1 (SINGH JASINDER P [US] ET AL) 7 April 2015 (2015-04-07) * column 7, line 28 - column 8, line 17; figure 5 * * column 10, lines 6-55; figure 7 * | 1-15 | |
| A | WO 2016/186696 A1 (INTEL CORP [US]) 24 November 2016 (2016-11-24) * paragraph [0026] * | 1-15 | |
| A | KR 2016 0135099 A (KT CORP [KR]) 24 November 2016 (2016-11-24) * abstract * & US 2018/152822 A1 (LEE KYUNGJUN [KR] ET AL) 31 May 2018 (2018-05-31) * paragraph [0086]; figure 2 * | 1-15 | |
| A,P | ZTE: "Discussion on system acquisition time reduction for MTC", 3GPP DRAFT; R1-1707090 REDUCED SYSTEM ACQUISITION TIME MTC, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG1, no. Hangzhou, China; 20170515 - 20170519 6 May 2017 (2017-05-06), XP051261670, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_89/Docs/ [retrieved on 2017-05-06] * paragraph [02.2] * | 1-15 | |

TECHNICAL FIELDS SEARCHED (IPC)

The present search report has been drawn up for all claims

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|----------------------------------|---|--------------------------------|
| Place of search Munich | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
|----------------------------------|---|--------------------------------|

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- & : member of the same patent family, corresponding document



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Application Number
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5

DOCUMENTS CONSIDERED TO BE RELEVANT

10

15

20

25

30

35

40

45

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|----------|---|-------------------|---|
| A,P | <p>SIERRA WIRELESS S A: "SIB validity indication in MIB", 3GPP DRAFT; R2-1708232, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE</p> <p>,</p> <p>vol. RAN WG2, no. Berlin Germany; 20170801 20 August 2017 (2017-08-20), XP051318134, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN2/Docs/ [retrieved on 2017-08-20] * paragraph [0002] *</p> <p>-----</p> | 1-15 | |
| A,P | <p>ERICSSON: "Skipping SIB1-BR acquisition", 3GPP DRAFT; R2-1710519 - SKIPPING SIB1-BR ACQUISITION, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE</p> <p>,</p> <p>vol. RAN WG2, no. Prague, Czech Republic; 20171009 - 20171013 8 October 2017 (2017-10-08), XP051342562, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings_3GPP_SYNC/RAN2/Docs/ [retrieved on 2017-10-08] * paragraph [02.1] *</p> <p>-----</p> <p style="text-align: center;">- / - -</p> | 1-15 | |
| | | | TECHNICAL FIELDS SEARCHED (IPC) |

The present search report has been drawn up for all claims

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| | | |
|----------------------------------|---|--------------------------------|
| Place of search Munich | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
|----------------------------------|---|--------------------------------|

55

EPO FORM 1503 03.82 (P04C01)

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5

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10

15

20

25

30

35

40

45

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|--|--|---|---|
| A,P | ERICSSON: "Skipping SIB1-BR acquisition", 3GPP DRAFT; R2-1803071 - SKIPPING SIB1-BR ACQUISITION, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. RAN WG2, no. Athens, Greece; 20180226 - 20180302 16 February 2018 (2018-02-16), XP051400376, Retrieved from the Internet: URL:http://www.3gpp.org/tsg_ran/WG2_RL2/TS GR2_101/Docs/R2-1803071 - Skipping SIB1-BR acquisition.docx [retrieved on 2018-02-16] * paragraph [2.1.2] * ----- | 1-15 | |
| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| The present search report has been drawn up for all claims | | | |
| Place of search Munich | | Date of completion of the search 21 February 2025 | Examiner Cremer, Jan |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 24 21 2828

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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21 - 02 - 2025

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|--|--|
| US 9001723 B1 | 07-04-2015 | NONE | |
| ----- | | | |
| WO 2016186696 A1 | 24-11-2016 | US 2018124685 A1 WO 2016186696 A1 | 03-05-2018 24-11-2016 |
| ----- | | | |
| KR 20160135099 A | 24-11-2016 | CN 107211346 A KR 20160135099 A US 2018152822 A1 | 26-09-2017 24-11-2016 31-05-2018 |
| ----- | | | |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82